

A ROUGH KEY TO THE IDENTIFICATION OF INDIAN OPHIDIA.

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A word of apology is necessary in laying before the readers of this Journal the rough key to the identification of Indian snakes which is printed below. It will be obvious to everyone that the key is purely artificial, and brings into juxtaposition snakes belonging to widely separate families. The key, it will be seen, does not pretend to be scientific, but is merely an attempt at such an arrangement as may enable unskilled observers to identify specimens of Ophidia by external characters. If reference is made to the synopsis of families which is given by Mr. Boulenger on page 234 of his work on "Reptilia and Batrachia" in the India Office series of manuals on the Fauna of British India, it will be observed that the families are there distinguished by criteria drawn mainly from the bony structure of the head. In order to apply this synopsis to the identification of snakes, it is necessary to acquire a larger knowledge of the skeleton of a snake than is common, and it therefore seems possible that an artificial key, based on characters which any one can see and understand, may sometimes be useful.

The first principle of division which has been adopted in arranging the snakes for the purposes of the key is the number of scales round the body. On page 281 of Mr. Boulenger's work will be found a diagram showing the scaling on *Dendrophis pictus*, and from this will be apparent the manner in which the scales should be counted. The first step in applying the key to the identification of an unknown snake would, therefore, be to count the number of scales round the body. As soon as this has been ascertained, it will be found that, whereas before there were some 260 species to anyone of which the snake might belong, the range of search has now been narrowed to 30 or 40 species. The next step is to count the number of subcaudals and ventrals. This is easily done, and with the aid of these two characters combined, the area within which the snake must occur is usually made much smaller. If the snake were *Dendrophis pictus*, for example, it would be at once apparent that the snake must be looked for in one of the genera *Dryophis*, *Deadrophis* or *Zamenis*. The third test to be applied is the

shape of the pupil of the eye. This is of less service than the preceding criteria, but it at once excludes the genus *Dryophis* from consideration in the examination of the snake assumed. The fourth character adopted is the number and arrangement of upper labial shields, the positions of which are shown in the diagram on page 278 of Mr. Boulenger's work. We have already arrived at the conclusion that the snake we are examining must either be *Zamenis korros* or a *Dendrophis*. The number of upper labials in *Z. korros* being 8, and that in *Dendrophis pictus* being 9, the area of search would now be narrowed down to the genus *Dendrophis*, and as Mr. Boulenger gives easily applied keys based on external characters for the ascertainment of all species within the genera, the specific identity of the snake can, with the aid of his book, be now ascertained with certainty.

The rough key here printed does not, therefore, pretend in many cases to do more than direct the observer to the correct genus. It will often indicate the species, but in large genera, such as *Silybura*, *Simotes*, *Tropidonotus*, etc., it would have taken up too much space to give criteria sufficient for the identification of each species, and it would also have been waste of time to do so, as they are easily available in Mr. Boulenger's book, which everyone attempting to use this key should possess. The chief drawback which seems likely to attend the use of the key is the variation which undoubtedly occurs in some of the characters adopted as criteria. The number of upper labial plates, of ventrals, and subcaudals is liable to vary from that adopted in the key, and to this extent identification may be made more difficult. But it is hoped that this source of error will not be sufficiently important to deprive the key of all utility.

It should be added that where the number of scales round the middle of the body varies from the number of scales round the neck, the former has been adopted. The last two snakes in the key, the Cobra and the Hamadryad, did not lend themselves to the arrangement adopted, and being well known, have been placed by themselves at the end. In the *Typhlopidae* the scales can hardly be said to be in so many "rows"; but the same phrase has been retained throughout for convenience. In many of the marine snakes the number of ventrals and subcaudals could not be given, but little difficulty is likely to arise over the identification of this class of snake. In conclusion, it should be once more stated that the imperfections of the key are fully recognized and that it is only presented as a possible assistance to those whose study of snakes is in an elementary stage.

A ROUGH KEY TO THE IDENTIFICATION OF INDIAN OPHIDIA.

	No. of Subcaudals.	No. of Ventrals.	Shape of Pupil of Eye.	No. of Upper Labials.	Other Criteria.
A.—SNAKES HAVING 13 ROWS OF SCALES ROUND THE BODY.					
<i>Calamaria pavementata</i>	13—27	140—182	Round	4, 2nd and 3rd entering eye.	
<i> " catenata</i>	41	187	Do.	5, " " "	
<i>Xylophis perroteti</i>	17—38	130—147	Do.	5, 3rd and 4th " "	
<i>Blythia reticulata</i>	19—29	127—150	Vertically subelliptic	5, " " "	
<i>Simotes planiceps</i>	27	132	Round	5, 3rd entering eye.	
<i>Trachischium fuscum</i>	33—42	130—162	Vertically subelliptic	5, 3rd and 4th entering eye.	
<i> " guentheri</i>	33—38	132—145	Do. do.	5, " " "	... One postocular.
<i> " tenuiceps</i>	34—39	134—138	Do. do.	5, " " "	... Two postoculars.
<i>Adenophis intestinalis</i>	15—23	223—273	Round	5, " " "	... Anal entire.
<i>Callophis maculiceps</i>	21—32	205—247	Do.	7, " " "	... One temporal and 2 postoculars (L. 1½ ft.)
<i> " trimaculatus</i>	24—35	28—274	Do.	3, " " "	... Anal divided.
<i> " maclellandii</i>	25—34	182—224	Do.	7, " " "	... Two temporals and 2 postoculars.
<i> " hibronii</i>	27—34	222—226	Do.	7, " " "	... One postocular.
<i> " nigrescens</i>	33—44	232—251	Do.	7, " " "	... One temporal and 2 postoculars (L. 3½ ft.)
<i>Trimeresurus macrolepis</i>	48—56	134—140	Vertical	7 or 8	... Head with scales and loreal pit.
<i>Ablabes scriptus</i>	64—76	130—154	Round	8, 3rd, 4th and 5th entering eye.	
<i>Hydrophobus nympha</i>	71—88	200—243	Vertically elliptic	7 (exceptionally 8 or 6), 3rd and 4th entering eye.	
<i> " davisonii</i>	91—108	235—265	Do. do.	7, 3rd and 4th entering eye.	
<i>Dendrelaphis caudolineatus</i>	100—112	176—188	Round	7, 5th and 6th " "	
<i>Dendrophis caudolineolatus</i>	124—128	149—161	Do.	8 or 9, 4th and 5th, or 5th and 6th entering eye.	
B.—14 ROWS OF SCALES ROUND THE BODY.					
<i>Glanconia blanfordii</i>	Covered with uniform cycloid scales.				

A ROUGH KEY TO THE IDENTIFICATION OF INDIAN OPHIDIA—*contd.*

	No. of Sub-caudals.	No. of Ventrals.	Shape of Pupil of Eye.	No. of Upper Labials.	Other Criteria.
C.—15 ROWS OF SCALES ROUND THE BODY.					
Rhinophis sanguineus	5— 10	182—214	Eye in the ocular shield.	4th labial in contact with parietal.	Tail ending in a large convex rugose shield.
Silybura macrolepis	7— 9	128—140	Do. do. ...	" " " ...	Tail ending in a small shield, bicuspid, the points side by side, or square.
Pseudoplectrurus canarius ...	6— 13	172—188	Do. do. ...	" " " ...	Tail compressed, terminal shield with two superposed single or bifid points.
Plectrurus perroteti	7— 12	152—165	Do. do. ...	" " " ...	Do. do. do.
" davisonii	7— 12	180	Do. do. ...	" " " ...	Do. do. do.
" guentheri	10— 12	171—175	Do. do. ...	" " " ...	Do. do. do.
" aureus	8— 12	164—177	Do. do. ...	" " " ...	Do. do. do.
Melanophium wynadense ...	10— 15	176—185	Do. do. ...	" " " ...	Tail cylindrical or slightly compressed, the terminal shield pointed or with one or two vertical ridges.
" bilineatum	15— 17	188—200	Do. do. ...	" " " ...	Do. do. do.
" punctatum	15— 18	184—198	Do. do. ...	" " " ...	Do. do. do.
Platyplectrurus sanguineus ...	5— 9	120—150	} Eye distinct from surrounding shields.	4th labial separated from parietal by a temporal.	} Do. do. do.
" trilineatus	8— 16	163—175			
" madurensis	10— 15	158—175			
Aspidura trachyrocta	13— 25	120—147	Pupil round ...	6, 4th entering eye.	
Xylophis stenorhynchus ...	17— 31	120—131	Do. ...	5, 3rd and 4th entering eye.	
Xeopeltis unicolor	26— 31	166—193	Vertically elliptic	8, 4th and 5th " "	
Simotes torquatus	27— 34	150—159	Pupil round ...	7, 3rd and 4th " "	
Oligodon brevicauda	25— 29	173—195	Do. ...	7, " " "	
" sublineatus	26— 35	186—159	Do. ...	7, " " "	
" ellioti	29	152	Do. ...	7, " " "	
" templetonii	31	185	Do. ...	7, " " "	
" dorsalis	47— 51	174—177	Do. ...	7, " " "	

A ROUGH KEY TO THE IDENTIFICATION OF INDIAN OPHIDIA—contd.

Other Criteria.	No. of Upper Labials.	Shape of Pupil of Eye.	No. of Ventrals.	No. of Subcaudals.	E.—17 ROWS OF SCALES ROUND THE BODY.
Tail ending in a large con- vex rugose shield.	.....	Do. do.	122—234	6—13	Rhinophis—5 species ...
Tail ending in a small square or bicuspid shield.	.....	Do. do.	129—162	25—37	Oligodon—3 species ...
No pterygoid teeth.	7, upper labials, 3rd and 4th enter- ing eye.	Round	148—202	30—61	Simotes—6 species ...
Maxillary teeth 8—12, pos- terior ones enlarged.	6, 7, or (mostly) 8 upper labials ...	Do.	101—154	19—38	Aspidura—3 species ...
Maxillary teeth 20, small, equal.	6, upper labials, 4th entering eye... " " " " 4th " "	Vertically sub-elliptic ...	146—158	31—34	Gerardia prevostiana ...
Anal entire.	7 or 8, and a loreal pit. 6, 3rd entering orbit.	Do. do. Vertically elliptic	140—155 180	31—45 42—65	Andistron hypnale ... Azemopsis fess ...
Anal divided.	8, 3rd, 4th and 5th entering eye... 7, 4th or 3rd and 4th entering eye. 9 or 10, 5th and 6th or 4th, 5th and 6th entering eye.	Do. do. Round Do.	153—178 177—207 151-220(240)	42—62 42—56 47—76	Lycodon striatus ... Haplocercus ceylonensis ... Polyodontophis subpunctatus ...
	9 or 10, 3rd, 4th and 5th entering eye.	Vertically elliptic	147—152	57—67	Trimeresurus trigonocephalus ...
	9 or 10, 3rd, 4th and 5th entering eye.	Do. do.	167—255	56—91	Lycodon fura, amaliensis, tra- vancoricus, anilicus, atropur- pureus,
	7 or 8, 3rd and 4th or 4th and 5th entering eye.	Round	205—228	56—70	Polyodontophis sagittarius ...
	10, 4th, 5th and 6th entering eye. 8, 3rd, 4th and 5th entering eye.	Do. Vertically elliptic	184—186 213—214	73—75 83—90	" bistrigatus ... Lycodon septentrionalis and fas- ciatus.
	9 or 10, 4th, 5th and 6th entering eye.	Round	199—190	102—131	Polyodontophis collaris ...

I.—21 ROWS OF SCALES ROUND THE BODY.						
<i>Cylindrophis rufus</i> and <i>maculatus</i> .	4—10	185—245	Round or vertically sub-elliptic.	6 upper labials, 3rd and 4th entering eye.		
<i>Trimeresurus monticola</i> ...	21—57 pairs.	132—156	Vertically elliptic	8 or 9, and loreal pit	...	Head covered with scales.
" <i>strigatus</i> ...	41—49 "	136—145	Do. do.	9 or 10, " "	...	" "
" <i>jerdonii</i> ...	42—67 "	164—187	Do. do.	7 " "	...	" "
" <i>gramineus</i> ...	53—75 "	145—175	Do. do.	9 to 12 " "	...	" "
<i>Ancistrodon himalayanus</i> ...	35—51 "	144—166	Do. do.	5 to 7 " "	...	Head with large shields.
<i>Platurus colubrinus</i> ...	30—45	195—240	Round ...	6 or 7, 3rd and 4th entering eye.	...	} Tail strongly compressed. { (Marine.)
<i>Distira jerdonii</i> ...	...	224—238	Do. ...	5, 3rd and 4th	...	
<i>Simotes splendidus</i> and <i>cyclusus</i> .	38—48	156—210	Do. ...	8, 4th and 5th entering eye.	...	
<i>Cerberus rhynchops</i> ...	49—72	132—156	Vertically elliptic	9 or 10.	...	
<i>Hypsirhina enhydridis</i> ...	60—73	159—169	Do. do.	8, 4th entering eye.	...	
<i>Coluber reticularis</i> ...	65—76	213—232	Round ...	8, 4th and 5th entering eye	...	Anal undivided.
<i>Zamenis fasciolatus</i> ...	73—88	197—225	Do. ...	8 " "	...	Anal divided.
<i>Coluber radiatus</i> ...	85—100	224—242	Do. ...	8 or 9 " "	...	Anal undivided.
<i>Dipsas trigonata</i> , <i>barnesii</i> , <i>ceylonensis</i> , <i>gokool</i> , <i>hexagonotus</i> and <i>cyanea</i> .	79—140	202—250	Vertically elliptic	8, 3rd, 4th and 5th entering eye.	...	
<i>Zamenis gracilis</i> ...	118—121	213—228	Round ...	9, 5th and 6th entering eye	...	Anal divided.
J.—22 ROWS OF SCALES ROUND THE BODY.						
<i>Typhlops leucomelas</i> , <i>jerdonii</i> , <i>theobaldianus</i> , <i>tennicollis</i> .	Body covered with uniform cycloid scales.		Eyes under shields	4.		
K.—23 ROWS OF SCALES ROUND THE BODY.						
<i>Trimeresurus monticola</i> ...	21—57 pairs.	132—156	Vertically elliptic	8 or 9, and loreal pit	...	Head covered with scales.
" <i>jerdonii</i> ...	42—67 "	164—187	Do. do.	7, " "	...	" "
" <i>gramineus</i> ...	53—75 "	145—175	Do. do.	9 to 12 " "	...	" "
<i>Ancistrodon himalayanus</i> ...	35—51 "	144—166	Do. do.	5 to 7 " "	...	Head with plates.
<i>Vipera lebetina</i> ...	42—48	154—180	Do. do	10 to 12 (no loreal pit).	...	
<i>Platurus colubrinus</i> ...	30—45	195—240	Round ...	.....	...	(Marine) Tail strongly compressed.
<i>Tropidonotus plumbicolor</i>	35—50	144—160	Do. ...	7, 3rd and 4th entering eye.	...	
<i>Coronella brachyura</i> ...	46—53	213—223	Do. ...	8, 4th and 5th "	...	
<i>Cerberus rhynchops</i> ...	49—72	132—156	Vertically elliptic	9 or 10.	...	

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No. of Sub-caudals.	No. of Ventrals.	Shape of Pupil of Eye.	No. of Upper Labials.	Other Criteria.
78—88	197—225	Round	8, 4th and 5th entering eye	Anal divided.
65—110	210—278	Do.	9 (exceptionally 10 or 11), 5th and 10 to 13	Anal entire.
75—94	220—265	Do.	6th or 4th, 5th and 6th entering eye.	Anal entire.
79—90	233—246	Do.	8, 4th and 5th entering eye	Anal divided.
90—107	230—284	Do.	9, 5th and 6th	"
L.—24 ROWS OF SCALES ROUND THE BODY.				
Typhlops oatesi, dardi, bothrio-				
rhynchus.				
Body covered with uniform				
cycloid scales.				
Eyes under shields				
... 4.				
M.—25 ROWS OF SCALES ROUND THE BODY.				
21—40	138—185	Vertically elliptic	11 or 12	(Lateral scales serrated).
26—41	139—156	Do.	5, 3rd entering eye	(Aquatic.)
30—45	195—240	Do.	5, 3rd and 4th entering eye.	(Marine.) Tail strongly com-
35—50	144—160	Round	7, 3rd and 4th entering eye.	[pressed.
45	125	Vertically elliptic	8, 4th entering eye.	Anal entire.
42—48	154—180	Do.	10 to 12—(scales strongly keeled).	Anal entire.
49—72	132—156	Do.	9 or 10—(scales strongly keeled).	Anal divided.
55—75 pairs.	160—182	Do.	11 to 13, with loreal pit.	
76—92	200—218	Do.	10 to 11, "	
65—110	210—278	Round	10 to 13, "	Three or four postoculars.
75—107	220—284	Do.	9 (exceptionally 10 or 11), 5 and 6, or 4th, 5th and 6th entering eye.	Two postoculars.
106—131	259—270	Vertically elliptic	8 to 11.	
138—149	236—263	Round	9 or 10, 5th and 6th or 6th and 7th entering eye.	
21—40	138—185	Vertically elliptic	11 or 12	(Lateral scales serrated).
26—41	139—156	Do.	5, 3rd entering eye	(Aquatic.)
30—45	195—240	Do.	5, 3rd and 4th entering eye.	(Marine.) Tail strongly com-
35—50	144—160	Round	7, 3rd and 4th entering eye.	[pressed.
45	125	Vertically elliptic	8, 4th entering eye.	Anal entire.
42—48	154—180	Do.	10 to 12—(scales strongly keeled).	Anal entire.
49—72	132—156	Do.	9 or 10—(scales strongly keeled).	Anal divided.
55—75 pairs.	160—182	Do.	11 to 13, with loreal pit.	
76—92	200—218	Do.	10 to 11, "	
65—110	210—278	Round	10 to 13, "	Three or four postoculars.
75—107	220—284	Do.	9 (exceptionally 10 or 11), 5 and 6, or 4th, 5th and 6th entering eye.	Two postoculars.
106—131	259—270	Vertically elliptic	8 to 11.	
138—149	236—263	Round	9 or 10, 5th and 6th or 6th and 7th entering eye.	

N.—26 ROWS OF SCALES
ROUND THE BODY.

8 Typhlops diardi	Body covered with uniform cycloid scales.	Eyes under shields	... 4.	
O.—27 ROWS OF SCALES ROUND THE BODY.				
Echis carinata	21—40	138—185	Vertically elliptic	... 11 or 12 (Lateral scales serrated)
Fordonia leucobalia	26—41	130—156	Do. do.	... 5, 3rd entering eye (Aquatic.)
Tropidonotus phumbicolor	55—50	144—160	Round ... ..	... 7, 3rd and 4th entering eye.
Vipera lebetina	42—48	154—180	Vertically elliptic	... 10 to 12.
" russelli	45—60	163—172	Do. do.	... 11 or 12.
Trimeresurus mucrosquamatus	} 55—92	160—218	Do. do.	... 10 to 13—with loreal pit.
" purpureomaculatus				
" cantoris				
Coluber helena	75—94	220—265	Round ... ..	... 9 (exceptionally 10 and 11) ... Two postoculars.
Zamenis diadema and arenarius	65—110	210—278	Do. ... ..	... 10 to 13 Three or four postoculars.
Dipsas forstenii	106—131	259—270	Vertically elliptic	... 8 to 11.
Coluber oxycephalus	138—149	236—263	Round ... ..	... 9 or 10, 5th and 6th or 6th and 7th entering eye.

P.—28 ROWS OF SCALES
ROUND THE BODY.

Typhlops acutus	Body covered with uniform cycloid scales.	Eye under shields	... 4.
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Q.—29 ROWS OF SCALES
ROUND THE BODY.

Echis carinata	} See above under 27 rows.			
Fordonia leucobalia				
Vipera russelli				
Trimeresurus cantoris				
Zamenis diadema and arenarius				
Hydrophis gracilis	225—264	Round 6, 3rd and 4th entering eye ... (Marine.) Tail compressed.
Hypsirhina sieboldii	48—56	147—156	Vertically elliptic	... 7 or 8, 4th entering eye.

R.—30 ROWS OF SCALES
ROUND THE BODY.

Typlops acutus	Body covered with uniform cycloid scales.	Eyes under shields.	
Stoliczkaia khasiensis	115 | 210	Round ... ..	... 3, 5th and 6th entering eye.

